Factors influencing willingness to pay for compulsory social health insurance among informal sector workers in Kazakhstan

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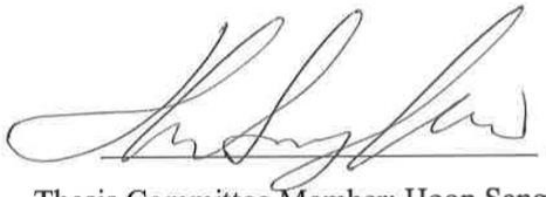

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List of abbreviations

Fund	Non-profit joint stock company "Social health insurance Fund»
CSHI	Compulsory Social Health Insurance
PHC	Primary Health Care
SGBP	State Guaranteed Benefit Package
MHIF	Mandatory Health Insurance Fund
OECD	The Organisation for Economic Co-operation and Development
GDP	Gross Domestic Product
WHO	World Health Organisation
NHA	National Health accounts
OOP	Out-of-pocket payment
COPD	Chronic Obstructive Pulmonary Disease
RTA	Road Traffic Accidents
VHI	Voluntary Health Insurance
CHI	Compulsory Health Insurance
FSHI	Fond for Social Health Insurance
NGO	Non Governmental Organizations’
USSR	United Soviet Social Republics
WTP	Willingness to Pay

Abstract

In order to develop the solidarity of the population and employers in the sustainable development and efficiency of the national health system, as well as to eliminate financial risks due to the growing public and private health costs, a system of compulsory social health insurance was introduced in 2016 in Kazakhstan. As a classic form of social health insurance the health services will be paid through payroll contributions from employer and employee, self-employed individuals and the government. The main problem is the large number of self-employed people for whom contributions are not made. Into this category includes more than 2 million people. Of these, 503 374 persons are young people.[26] Lack of health insurance coverage in Kazakhstan among informal workers can impedes access to health care. Lack of health insurance is also can be a major cause of poverty. The main objective of this study was to assess informal workers willingness to join a social health insurance (SHI) model in Oskemen, East Part of Kazakhstan, and to determine factors influencing this willingness. A second objective was to identify informal workers willingness to pay according contribution level and their payment ability. The study was cross-sectional in design and conducted between August 2019 and October 2019 in Oskemen city and adjacent village Samsonovka. We elicit the WTP using the double bounded dichotomous choice (DBDC) elicitation method was used to estimate respondents WTP for proposed health insurance premium. The study participants were randomly selected by two-stage cluster sampling. Adequate sample size of 195 was calculated as optimal based on a 5% margin of error and a 95% confidence interval for a population of 1.5 million and was adjusted to accommodate an expected 80% response rate. From the 195 participants, 161 participated in the interview, making a response rate of 82%. The sex of participants was equally distributed 80(100,0%) were females and 81(100,0%) were males, their mean (± SD) age was 33,86 (± 11,673) years, ranging from 19 to 60. The monthly

average income of participants (40%) was 85 000 tenge (US218$) ranging from 40000 tenge to 90000 tenge (US 103$ - 230$) respectively. Informal workers who are aware 2.5 times more likely to pay (p-value 0.022) the second bit than person who is not aware. Also, Trust level for SHI was significant and the person who does not trust on SHI system and improvement in the Health Care system after introducing SHI 4.2 times less likely to pay (p-value 0.021) contribution rates compare to who does. In addition, monthly income and expenditure were statistically significant (p-value <0,005). The person who have monthly income between 40.000 tenge and – 90.000 tenge, which is lower the average monthly wage in this region, 5.8 times are more likely to pay for the second bit than the higher income group informal workers 500.000 tenge and higher. Also informal workers who are earning monthly from 90.000 tenge to 200.000 tenge 4.3 times are more likely to make contribution than the higher income group. In addition the Health Care Expenditure for the last month positively correlated with the willingness to pay (p-value 0.028). In addition, monthly household expenditure was statistically significant (p-value < 0,005) and the Logistic regression analysis is interpreted in the informal workers who is spending from 90.000 tenge to 200.000 tenge, which is equal to average wage in this region, 17,6 times more likely to pay than who are spending two times higher (500.000 tenge and high) The majority of the informal workers were willing to enroll the social health insurance scheme, with a mean of WTP of 2% of their average monthly salary. This was lower than the premium proposed by the government (35%).Our results suggest that the contribution rate for informal workers should be revised according to income level of regions and geographical location of informal workers. Also, it is important to provide Educational Campaigns for rural dwellers and for people who doesn't have access to media equipment's. Because the willingness to pay is positively correlated with SHI awareness and Trust level on the system.

I. Introduction

1. Background:

Universal health coverage is the goal that all people obtain the health services they need without risking financial hardship from unaffordable out-of-pocket payments. It involves coverage with good health services – from health promotion to prevention, treatment, rehabilitation and palliation – as well as coverage with a form of financial risk protection. A third feature is universality – coverage should be for everyone. Services must be physically accessible, financially affordable and acceptable to patients if universal health coverage is to be attained. (David B, 2013)[68]

Large or catastrophic health expenditures can lead to poverty among vulnerable people or poor people is unfavorable and alarming in current situation. The innovative methods can be used for health care delivery financing and to avoid catastrophic out-of-pocket health expenditures as a suggestion of low-cost health insurance to low-income households. Defining the demand or willingness to join and pay for health insurance is crucial in exploring the feasibility of such schemes, establishing prices, and setting potential contribution levels. The World Bank's agenda on Financing Health Services in Developing Countries (1987), and the recent World Development Report (1993), emphasizes the demand side – highlighting health insurance, user fees, and the private sector for strengthening the health sector. This is a major departure from the earlier approach which focused on the supply side–public sector spending, costs, management and efficiency –that has dominated the international health finance agenda for many years (Griffin, 1989, 1990).

Kazakhstan's Gross Domestic Product (GDP) was United States Dollar (USD) 170,539 billion, or USD 27,830.585 per capita, in 2018 /worldbank data/.The country's GDP is to a large degree dependent on mineral resources, oil and gas, consequently the economy is particularly prone to external shocks. The population of Kazakhstan is currently estimated (as

of 2019) to be 18.55 million, with a life expectancy at birth 72.9 [5][3] . (https://data.worldbank.org/data-catalog/world-development-indicators).

Kazakhstan inherited a Semashko-style healthcare system, which has an integrated approach to providing and financing care with primary healthcare and the district physician at the centre, a strong referral system and an extensive hospital network. The main principle of this system is that health should be accessible and free of charge for the entire population. Since 2000, the country has initiated three comprehensive reform programmes: the National Programme for Health Care Reform and Development 2005–2010, the State Health Care Development Programme for 2011–2015 ('Salamatty Kazakhstan') with the specific aims of reducing the size of the hospital sector and strengthening primary healthcare and the "State Programme "Densaulik" for health care system development in republic of Kazakhstan 2016-2019" for the development of the public health system and the improvement of the prevention and management. (4. Konrad Obermann, 2016)[4]

2. Health financing and Compulsory Health Insurance in Kazakhstan:

In 2018, total health expenditure consisted to an approximately 4.5 % of GDP, which was the lowest shares in the WHO European Region. Two main sources comprised the health revenue: the government budget as a national and oblast levels, out-of-pocket payments as a formal and informal payments. Public health spending is only 1.8% of GDP, thus contributing only 58% of total health expenditure, and leaving high out-of-pocket costs for patients. The low level of public spending on health reflects relatively limited overall government spending as well as fact that health is a relatively low budget priority compared with OECD country average. (OECD, 2018)[6] Most private out-of-pocket spending is on pharmaceuticals and medical consumables (Katsaga A, 2012)[7] Patients make out-of-pocket payments for medicines, medical supplies in hospital and for medicines, medical aids and dental care in outpatient settings. Hospitals and other types of health care organizations currently charging for services outside the SGBP. The level of private spending in 41 % of current health spending in 2016

(37% in 2015) is quite high (the OECD average is 27.4%, in Russia – 38.9%), but a number of OECD countries have higher private spending. WHO estimates that a health system in which private spending accounts for no more than 20% is considered sustainable. While in OECD countries households pay on average 40% of the cost of pharmaceuticals out of pocket, in Kazakhstan, the figure is 84% (OECD, 2018). Private expenditure on outpatient services comprised primary health care services (14%) and dental and other services (86%). (Katsaga A, 2012)[7.]

Kazakhstan has embarked on a large-scale reform of its healthcare system in order to achieve Universal Health Coverage. The health-related 2020 Strategic Development Goals reflect this political ambition. (OECD, 2018) [6] In order to improve the quality health care services and to achieve universal health coverage without financial burden for households' health insurance scheme was introduced in Kazakhstan. Further development of the health care system involves the formation of a three-level system of medical care, where the responsibility for the health of citizens is distributed between the state, employers and employees. In order to achieve better health outcomes of the population the government of Kazakhstan is undertaking large scale health sector reforms, including the reorganization of health financing and service purchasing systems.

The compulsory social health insurance system is based on compulsory insurance payments of the working population, employers and the self-employed. For socially vulnerable segments of the population (children, pensioners, disabled citizens and the unemployed) insurance premiums will be paid by the state from the national budget. As a classic form of social health insurance the health services will be paid through payroll contributions from employer and employee, self-employed individuals and the government. The main problem is the large number of self-employed people for whom contributions are not made. Into this category includes more than 2 million people. Of these, 503 374 persons are young people. But at the same time, citizens whose employment is not formalized, the possible instability of

payment of contributions from individual entrepreneurs, the existing high volume and irrationally high proportion of expenditures on the stationary sector, the underdevelopment of the PHC sector can put pressure on the financial stability of the CSHI system. Also, the assessment the income level of informal workers whose employment and income is not stable can make difficulties to enroll this category. To prevent this problem and to attract such a number of self-employed people, the Government in April 2018 proposed to create a Single aggregate payment – a special tax regime. The citizen who paid the tax is automatically registered in the system of CHI and pension. (T.K. Rostovskaya).

3. Review of literature

The intersection point of the supply and demand curves is not efficient to establish a price for a product as discussed in Microeconomics. It is a complicated decision to price a product which is a public or non-market good. While prices in the market can safely be used to value marginal changes for market commodities, the impact of nonmarginal changes is measured by the change in areas under demand and supply curves. Several methods have offered numerous solutions to this problem e.g. hedonic pricing, cost-benefit analysis, travel cost and cost-effectiveness to name a few. To elicit directly what consumers would be willing to pay for a particular product or good several willing to pay literatures applied Contingent Valuation method. According to Klose the contingent valuation methods in the health care area was conducted by using original data and meeting qualitative criteria. Theoretical validity and convergent validity of contingent valuation study were shown in past studies. However the criterion validity was not checked. In previous studies different elicitation formats applied widely, which studies did not compared. Direct questions was problematic. In bidding games application of the first bid can lead to starting point bias and range of bids of payment cards can be the cause of range bias. However, strategic bias was absent. The impact of different levels of valuation (ex-ante, ex-post) and of elicitation methods of payment, as well as the

possible clustering of the results complex holistic scenarios was not investigated well (Klose, 1999)[37].

As a simple and nonmarket valuation method contingent valuation method is mostly applied in cost- benefit analysis of hypothetical market. However, this method is met criticism in the validity and the reliability of the results, and the effects of various biases and errors.

In simple terms, validity refers to the 'accuracy' and reliability refers to 'consistency' or 'reproducibility' of the CV results (Kealy et al., 1990). As an accuracy indicator of study variables validity refers to the degree to which the CV method measures the theoretical construct or the true economic value of respondents. The validity is divided into three types: content validity, criterion validity and construct validity. The content validity in the contingent valuation experiment concerns to the ability of the instruments included in the scenario to measure the value in an appropriate manner. Criterion validity of the CV method may be assessed in terms of another measure, as a 'market price' for the same goods which may be considered as a criterion. Construct validity divided into two forms: convergent validity and theoretical validity. The convergent validity refers to the correspondence between two measures of the same theoretical construct. CV results can be said to be 'theoretically valid' if the results conform to the underlying principles of economic theory. In other words, the theoretical validity involves assessing the willingness to pay (WTP) values of the CV method by way of regressing the WTP value against standard economic variables (Mitchell and Carson, 1989). On the other hand, the reliability refers to extent to which the variance of the WTP amounts is due to random sources (Mitchell and Carson, 1989)[47].

Apart from reliability and validity of the value of WTP results another source of error is the 'sequencingeffect'(Cummings et al., 1986), which is also used as a 'question order bias'(Mitchell and Carson, 1989). Sequencing effect can be occur if a WTP value for a particular commodity varies by the order of the good in a sequence. In my study this problem

will arose in the sequencing of bids for contribution level. To prevent this issue, hypothetical scenario and detailed contribution rate was prepared with premium rate.

The 'information' in a CV method takes an important role. Hypothetical scenarios which can provide clear and high level of information can define the validity of contingent valuation methods. The nature of the information provided has been found to affect the results both positively as well as negatively (Venkatachalam, 2004)[47]. In my study, the value-enhancing element, different levels of contributions and the value neutral element, the scenario of health financing models which includes mandatory, voluntary health insurance and basic package of health insurance are provided for respondents to enhance their notion about insurance benefits.

In this paper, the CV method is used to study the demand for new established Social Health insurance in Kazakhstan among informal sector workers. Despite of apparent advantages, some researchers and politicians are skeptical to CV methods due to different reasons. The first reason is about the tangibility of the CV outcomes since both the markets and the preferences are hypothetical. As quoted by Kriström (1990), the CV method is considered to be based on 'hypothetical answers to hypothetical questions'. This can establish a psychological barrier to relying on such results. The second concern is related to the methodological applications beginning from the questionnaire design and administration to the techniques of estimation. As an assumption of low reliability and validity of the results can be affected from the measurement errors of the CV results. Critics of contingent valuation like Diamond and Hausman, and their coauthors in Hausman (1993), did not accept contingent valuation as a method of economic valuation because the results of contingent valuation studies are inconsistent with economic theory as they explain it. However, most researchers agree that if prevailed preferences or market situations cannot be directly observed or if the item under consideration is not traded in a real market, CV methods are the best alternative to assess the value of public or non-traded goods and services. It is argued that in spite of the fact that the

CV methods have their own limitations, there is no sufficient evidence to reject the results of carefully designed and executed CV experiments and the results can be proven to be consistent with economic theory and other requirements (Cameron, 1991, Carson, 1997, Hanemann et al., 1991, Kriström, 1990, Neumann and Johannesson, 1994, Randall, 1997). Various objections that contingent valuation results are incompatible with economic theory. Even without a market, there still exists a latent demand curve for nonmarket goods; contingent valuation represents a way to tease this out

Some developing countries used contingent valuation in order to evaluate the willingness to pay (WTP) for health insurance in. For example, CV based study in Ethiopia (Asfaw & von Braun, 2005) finds evidence supporting the feasibility of introducing community based health insurance schemes (CBHIS). The main objective of this paper was to examine the potential of CBHIS to mitigate the impacts of health related burdens due to economic reasons on poor rural households in Ethiopia. As a result they suggest that such schemes indeed would be helpful in protecting the poor against financial health burdens. In Ethiopia 78% of private health expenditures are out-of-pocket compared to 37% in Kazakhstan. Asenso-Okyere, Osei-Akoto, Anum, and Appiah (1997) concluded, in Ghana, that almost 64% of respondents were willing to pay about Cedi 5000 or US$3.00 per month for a household of five for a National Health Insurance scheme aimed at the informal sector[26]. By using an ordered probit model, they concluded that level of premiums households were willing to pay were found to be influenced by dependency ratio, income or whether a household has difficulty in paying for health care or not, sex, health care expenditures and education. As a middle-income country the study in Vietnam done by Lan Hoan Nguyen, Anh Thuan Duc Hoang[67] found that the WTP for SHI is influenced by knowledge and existence of chronic disease among respondents of SHI and at every copayment levels and the result of the study was that households' average willingness to pay is higher than the costs for public health care and self-treatment. In addition, Curt Lofgren et al[30] report on a study of the willingness to pay for health insurance among a

rural population in northern Vietnam that households' average willingness to pay (WTP) is higher than their costs for public health care and self-treatment and age was negatively related to willingness to pay. Study conducted by Liu et al[70], examined the impact of rural health insurance on health equity in health care utilization in China and Vietnam. The result of the study reveals that in Vietnam those who insured have significant utilization of health care for both outpatient and inpatient compared to China which insurance membership had no significant influence on outpatient service utilization. In both country poor people are less benefited from health insurance and there is inequality in health care utilization among low and high income groups. Asgary, Willis, Akbar Taghvaei, and Rafeian (2004)[24] examine willingness to pay for health insurance in rural Iran finding that households are willing to pay on average US$2.77 per month for health insurance using an iterative bidding game technique. At the same time levels can be varied across countries and differing products which is not comparable, this evidence demonstrates that individuals in a variety of low-income countries would be willing to pay for low-cost health insurance schemes. In addition Shirin Nosratnejad[36], applied the double-bounded dichotomous choices (DBDC) to estimate the WTP for social health insurance in Iran. As a result they found that the average WTP for social health insurance per person per month costed 137 000 Rial (5.5 $US). WTP for the health insurance positively correlated with higher levels of education, income and working status of household heads. Moreover, the WTP increased in direct proportion to the amount of insured members of each household and in inverse proportion to the family size. Study conducted by Panda et al.[56],by using contingent valuation survey method to obtain estimates of WTP for health insurance in India. The result of their study indicates that the marginalized (poor) people are more willing to pay a higher percentage of their income on health insurance fee (premiums) when compared to higher income groups. Barnigausen et al investigate WTP among informal sector workers in Wuhan, China. Informal workers have a WTP that is higher than the estimated cost of CBHIS based on past health expenditures and predicted coverage with BHI declined steeply with the

premium contribution at low contribution levels. Mathiazhagan[23] estimated the willingness to pay for a rural health insurance scheme through community participation is through contingent valuation approach (logit model). Result of this study shows that a probability of willingness to join was found to be greater than the probability of willingness to pay. And socio-economic factors and physical accessibility to quality health services appeared to be significant determinants of willingness to join and pay. Another study which is conducted in Burkina-Faso by Hegjin Dong, Bocar Kouyate, John Kairns, Frederick Mugisha, Rainer Sauerborn[35] used take-it-or-leave-it (TIOLI) and the bidding game to elicit WTP. As a result of study they found that the average individual was willing to pay 2384 (elicited by the TIOLI) or 3191 (elicited by the bidding game) CFA (US$ 3.17 or US$ 4.25) to join CBI for him/herself. The head of household agreed to pay from 6448(elicited by the TIOLI) or 9769 (elicited by the bidding game) CFA (US$ 8.6 or US$ 13.03) to join the health insurance scheme for his/her household.

Sayem Ahmed and Mohammad Enamul Hoque[32] was investigated the WTP Community Based Health insurance among informal workers (rickshaw pullers, shopkeepers and restaurant workers) in Urban Bangladesh and defined that WTP can vary depending on income level and education status. Another study in rural Cameroon conducted by Binam[22] used ordered probit model to estimate the demand for community based health insurance and define that the characteristics specific to the respondents and health facilities that can affect the value of the willingness to prepay. Study conducted in Caribbean region by Adams et al[69] demonstrates that the willingness to participate and pay for the national health insurance on average was $28.83 per month for each person to enroll in the national health insurance plan and a higher socioeconomic status was the principal determinant factor for the willingness to participate.

Study conducted in Penang region in Malaysia by Shafie AA shows that most Malaysians are willing to join the voluntary community-based health insurance and to

contribute an average $114.38 per month per household and this amount was influenced by ethnicity, educational level, household monthly income, the presence of chronic disease and the presence of private insurance coverage[28].

In conclusion, contribution levels and defining factors of willingness to pay variable is different countries with different health insurance schemes, the results of literature review shows that respondents in a different low and middle income countries would be willing to pay for less costing health insurance schemes.

4. Objectives and Hypothesis of the study

The present study is a diligence in the area of social health insurance to assess the informal workers awareness level and willingness to join and pay for it. With a purpose to develop a sound theoretical framework for investigation, a review of literature regarding health insurance in Kazakhstan and other countries has been made. Although the present study is an effort in the same direction yet it differs from several dimensions. As firstly, it examines the respondents who are aware or not aware about health insurance as well as Trust level on SHI; secondly, this study analyses the WTP with health care utilization information such as Health care expenditure, Time to get the local health facility, Satisfaction level with the quality of health services, type of attending hospital, Accessibility and availability of free services; thirdly, the socio-economic characteristics defined for income elasticity theory.

The particular objectives of this study are:

-To examine the relationship between socio-economic, health service utilization variables and Willingness to pay.

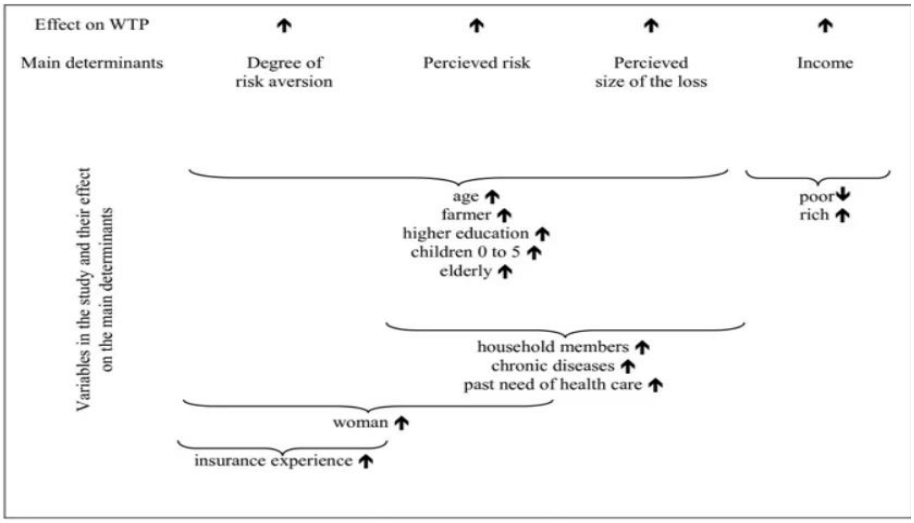
-To identify the amount of money which informal workers are willing to pay for premium level and compare it with officially defined contribution level, 5% of minimum wage in Kazakhstan.

Using the Vietnamese experience in the defining of Willingness of join Social Health insurance by Curt Lofgren, Nguyen X Thanh and Lan Hoang Nguyen, Anh Thuan Duc Hoang we created hypothesis which were suitable for Kazakhstan health care system and socio-economic situation. A social health insurance (SHI) scheme was introduced in Vietnam in 1992 (1). After over 20 years of operation, the SHI scheme has become an important financing source for the health-care system and contributes to improved health indicators in the country through increased access to health-care services for the beneficiaries, especially the poor and vulnerable. The insured population is divided by the government into five groups depending on contributive responsibility to the SHI fund.[67] Also, as a formal communist country which were part of USSR, Kazakhstan health care system is similar to the Vietnamese system. We expected to test a hypothesis that there is a positive relationship between informal workers willingness to join and pay for social health insurance and their socio-economic and health care utilization characteristics. Next variables are included to define "Health care utilization rate": Absence or presence of chronic disease, type of visiting hospital, accessibility and availability of health services which is included to Guaranteed Volume of Free Medical Care, Average Time to get to the local hospital, Satisfaction with quality of services at public health facilities and Last month's expenditure on health care. Also, the awareness about SHI and Expectation (Trust) level was checked. In addition to health care utilization, WTJ of informal workers may associate with socio economic characteristics. These factors are included in the analysis as control variables which include: age, gender, marital status, number of children, monthly income and expenditure, level of education and occupation. Participants' socio-demographic characteristics, household members' chronic disease status, their occupation, presence of free health coverage and prior information on health insurance were the factors assessed for predicting WTP. (Appendix 2)

The general framework of the logit model is expressed as follows. We hypothesize that five variables will affect WTJ, the perceived extent of the loss and the perceived risk amongst

respondents, namely; age, educational level, health condition /presence or absence of chronic disease/and the income level, health utilization of individual. The older the respondent age is, the higher the perceived risk will be for the respondent. We assume that the degree of risk aversion increases with age, as does the perceived extent of the loss. An older person has more experience and can therefore more precisely anticipate the effect of illness or injury on their catastrophic expenditure. Also it is expected that WTP can increase accordingly the higher income and lower expenditure. We predicted that married couples would be more willing to join the scheme than single ones because of the extended responsibility. As the years of schooling increase it is assumed that people would better understand the benefits of social health insurance and register in the scheme. We can predict that people who have been educated to a relatively high level will have more information about the influence of and need for health care due to illness. I hypothesize that Socio-economic characteristics of informal workers and health care utilization patterns can influence the Willingness to join and pay for SHI in Kazakhstan, whereas the probability to join SHI for informal workers with higher health utilization rate and satisfaction with offered health services will be greater than the probability of WTJ for those lower “satisfaction” and “utility rate”.

Figure 1, The main determinants of WTP and variables



The main determinants of WTP and Varaibles. Adapted People's willingness to pay for health insurance in rural Vietnam, Curt Lofgren, Nguyen X Thanh, Nguyen TK Chuc, Anders Emmelin & Lars Lindholm, 2008, google scholar

The determinants of willingness to join and pay in this study are mostly in line with our expectations; having a greater income, higher education, higher health expenditure for last month and at least one household member with chronic disease increases WTP. Assessment of the viability and desirability of a social health insurance scheme through community participation and a population's willingness to pay for such a scheme demands pre-evaluation of the consequences for health care utilization of the respondents and their socio-economic characteristics (Figure 1). Therefore, in this context, the contingent valuation approach was used. In order to test the validity of the CV method, i.e. whether the hypothesized theoretical relationships are supported by the data (Mitchel and Carson, 1989), the validity was carried out

in this study by estimating the theoretically derived regression equations. It has also been shown to be consistent with the theory of utility maximization, under certain specifications of the utility function.

II. Methodology

1. Study site:

The study was conducted between August 2019 and October 2019 in Oskemen city and adjacent village Samsonovka which is subordinated to the city administration of Ust-Kamenogorsk in the East part of Kazakhstan. Oskemen is an industrial city which is the main areas of the economy: non-ferrous metallurgy, machine building and metalworking, energy, light industry, forestry, food industry. The city administration has 1 rural district, 7 rural settlements. The city has a population of in 18489.7 in 2019, of which 40% lives in rural areas, the village Samsonovka has a population of 451 (226 males and 225 females). Income per capita in 2018 was 20.76 USD/ year (799,3 tenge) and average wage is 462.33 USD$ (177 963 tenge). The proportion of unemployment is 4.8%. (Statistics, www.stat.gov.kz)[14]

2. Participants:

The target population were informal sector workers in Oskemen who were at least 18 years of age but not older than 60 years of age and did not currently enrolled in any type of health insurance. We used an operational definition of informal sector workers that is similar to one that has been used in surveys conducted by the *International Labour Office*, namely own-account workers (excluding administrative workers and professionals), unpaid family workers, and employers and employees working in establishments with less than 10 persons engaged.

"Informal employment represented one-third of total employment in Kazakhstan in 2009. The majority of informal workers in Kazakhstan are employed in agriculture and

informality is concentrated in rural areas. Close to 70 percent of all informal workers live in rural areas and over 60 percent work in agriculture. The largest group among the informal workers is contributing family members: household employment accounts for a half of total informal employment. Informal employment outside agriculture is much smaller. It represents 18 percent of total non-agricultural employment and 17 percent of urban employment. There are thus two main types of informality in Kazakhstan: large agricultural and rural informal employment and much smaller nonagricultural and urban informal employment". (Rutkowski, 2011)[16] Furthermore, most of informal workers (close to 70 percent) are employed in the market services sector, mainly in trade and restaurants; that is in the traditional, less productive sector of the economy. Finally, the vast majority (85 percent) of informal workers are employed in micro and small firms. Job characteristics of informal workers are thus very much different from those of formal workers (Rutkowski, 2011)(Figure 3).

The widespread introduction of user fees in an attempt to bridge this gap has increased out-of-pocket expenditure, led to inequity in access to care and undermined financial protection against the cost of illness (WHO, 2000). Catastrophic health expenditure due to user fees is a major cause of poverty in the developing world. (Ying XH, 2007)[27]

Lack of health insurance coverage in Kazakhstan among informal workers can impedes access to health care. Lack of health insurance is also can be a major cause of poverty. The Household budget Surveys in 2001 and 2002 showed that persons from lower income groups tend to use health services less often, spend less on health than the more affluent, and rely on self-treatment (World Bank, 2004). A survey conducted in 2001 found that 35% of those reporting illness in the previous year did not seek care because they were unable to afford it. (Balabanova D, 2004)[9] Reliance on out-of-pocket (OOP) payments for healthcare service increases the financial burden of households and can be the cause of impoverishment, in Kazakhstan the out-of-pocket expenditure (% of current health expenditure) comprise 35,56 % of total healthcare expenditure in 2016 year (Rutkowski, 2011)[16].

"About one-third of the employed in Kazakhstan are not eligible for social insurance benefits because they do not contribute to the social insurance scheme. This is a large group of vulnerable workers, who are at an elevated risk of poverty, especially in the old-age. The risk of poverty is further increased due to the fact that most of the informal workers hold low-paid jobs. The single largest group of workers who lack social insurance coverage is subsistence farmers and contributing family members, who account for nearly 50 percent of all uninsured workers. Incomes of subsistence farmers as a rule are low, which does not leave much space for taxation. As regards the self-employed and informal wage employees, the extension of social security coverage requires the formalization of the employment status". (Rutkowski, 2011)[16]

According to the statistics of the Ministry labor and social protection of population of the Republic of Kazakhstan in the East Part of Kazakhstan including Oskemen city informal workers are mostly working in the agriculture, forestry and fishing (41%), Transportation and storage (10%) and in wholesale and retail trade; repair of motor vehicles and motorcycles (36%)./figure 2).

Figure 2: Informal workers by economic activity in the East Kazakhstan 2018

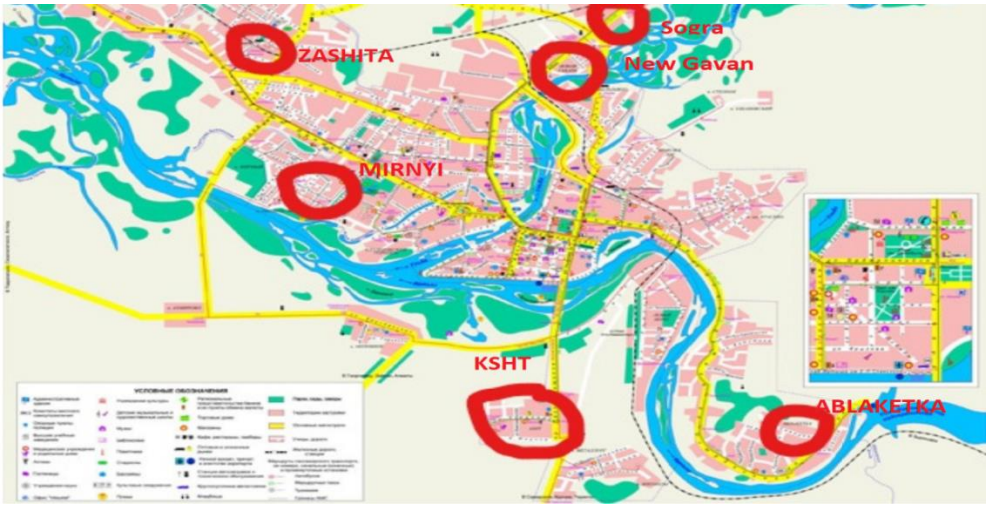
Source enbek.gov.kz

Social health insurance is generally sponsored by the government and membership is on a compulsory basis for a specified segment of the population. Since social insurance is usually financed through deductions from incomes, the core group normally covered by this system is made up of workers in the formal sector. Special efforts are made to cover workers in the informal sector because of difficulties in registering them and assessing their incomes. (Asenso-Oykere W, 1997)[26]

3. Sampling and sample size

Figure 3: Sampling map and sample distribution in Oskemen, East Part Kazakhstan, 2019

Sogra	KSHT	Zashita	Mirnyi	New Gavan	Ablaketka	Samsonovka
16	23	17	27	24	28	25



Due to the lack of official registration of informal workers in official organizations a sampling frame which can cover all informal workers in the selected study locations did not exist. The study participants were randomly selected by two-stage cluster sampling. In the first stage, six local authority areas were selected from each of the 10 administrative districts in Oskemen (Figure 3). In the second stage, a households and worker cooperatives was selected by a random walk.

To identify the study participants (respondents), I identified worker cooperatives and market places, agricultural farmers, restraunts, taxi stations and trade markets using walks and informal group discussions with community members and leaders. A list of workers was congregated from the representatives/leaders of informal employers or market places. Also, the inclusion and exclusion criteria were applied. The inclusion criteria were age (18 years or above) and experience (working in the same occupation for at least the past year). The exclusion criteria were workers having health insurance or paying health insurance contribution. Finally, I randomly selected 195 participants from the list of potential subjects. Data were collected by

trained interviewers during August and October months in 2019 in all study areas. Among the 195 selected respondents, 161 responded to the survey.

Adequate sample size of 195 was calculated as optimal based on a 5% margin of error and a 95% confidence interval for a population of 1.5 million and was adjusted to accommodate an expected 80% response rate.

4. Data collection

The study was cross-sectional and a pre-tested in online basis, interviewer-administered questionnaire was used to collect necessary data. Health post nurses from the study areas were selected to work as interviewers and trained over a period of 1 weeks on how to properly provide the questionnaires.

The questionnaire was prepared in English, translated into Kazakh and Russian languages and back translated into English to check for consistency and was pretested on 10 people in Oskemen city.

The questionnaire had three parts. First, the interviewers described the purpose of the study and asked respondents whether they consented to participate. Second, the interviewers asked participants questions about a number of individual characteristics. Neither participants' names nor any other characteristics that would allow identification of the participants after the interview were elicited or recorded. Third, the interviewers described the basic health insurance to the study participants.

This study was cross-sectional in design. Necessary data were collected between August and October 2019, by interviewing participants in person using a structured questionnaire A purpose of the study, consent to participation and description of the newly established SHI with the government subsidy was proposed to the respondents first. Second, in the in the socio-economic part one the interviewers asked participants questions about a demographic and socioeconomic profile. In the following part, part 2 examined the individual’s

knowledge of SHI and health seeking behavior. Then followed with the questions regarding to the willingness-to-join and pay for the schemes corresponding to different amounts of government subsidies in the questionnaire concluded the interview, response rate of the survey is 82%. The questionnaire was in three parts: part 1 was a demographic and socioeconomic profile of the respondent, part 2 asked questions about the individual's knowledge of SHI and health seeking behavior, and part 3 was about the levels of WTP for the SHI annual premium. The questionnaire was pre-tested on a group of 10 people in Oskemen city and revised before implementing data collection.

As a presented in Figure 6 the choice set depicted and explained to study respondents. It composed of three different health care financing systems in Kazakhstan: A was an out-of-pocket model with basic packages of guaranteed volume of free medical care similar to the present system in Kazakhstan, whilst B and C had more efficient benefit packages which can allow to take free medical care with extended packages of guaranteed volume of free medical care with different financing schemes. B was a compulsory social health insurance scheme based on community rating, and C was a voluntary medical insurance scheme based on risk rating.

The bid was calculated based on 5% of minimum monthly wage average in Kazakhstan where the minimum wage in Kazakhstan is 42 500 tenge which is 109$ in US. According to the Law of "Mandatory Social Health Insurance in Kazakhstan" the premium level for informal workers, for individuals who do not have a permanent income and are not included in the list of preferential categories of citizens who receive insurance from the state 5% of Monthly wage. Taking account 5% of minimum wage of Kazakhstan the bid was 2000 tenge (5,50 $ US).

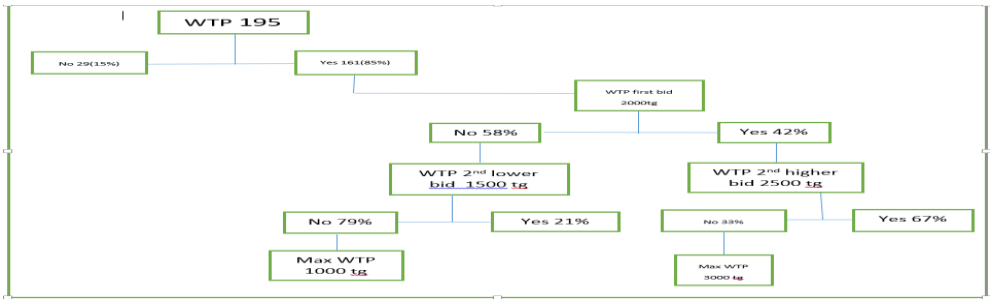
In this DBDC method, the respondent only answers 'yes' or 'no' to a given question about the WTP amount using starting bid. If the respondent says 'yes' to the first bid, a second bid that was ½ - 3000 tenge as much would be offered. If the respondent says "No" and reject the first bid, a second lower bid (1/2 first bid – 1000 tg) would be offered.

5. Econometric Analysis

5.1. Econometric model:

The goal of contingent valuation is to measure the compensating or equivalent variation for the good in question. Compensating variation is the appropriate measure when the person must purchase the good, such as an improvement in environmental quality. Equivalent variation is appropriate if the person faces a potential loss of the good, as he would if a proposed policy results in the deterioration of environmental quality. Both compensating and equivalent variation can be elicited by asking a person to report a willingness to pay amount. For instance, the person may be asked to report his WTP to obtain the good, or to avoid the loss of the good.

Figure 4. Summary Statistics to double bounded dichotomous choice questions



Using a econometric model which is described by Lopez-Feldman, linear functional form for the willingness to pay, the will be:

$$\mathrm{WTP_i}(z_i, u_i) = z_i\beta + u_i \qquad (1)$$

where Z_i is a vector of explanatory variables, β is a vector of parameters and U_i is an error term assumed to be independently and randomly distributed with mean zero and constant variance, σ^2. Let the first bid amount be t_1 and the second one t_2, and then each individual will be in one of the following categories (Lopez-Feldman, 2012)[71]:

1. The individual answers 'yes' to the first question and 'no' to the second, then $t_2>t_1$. In this case we can suggest that $t_1 \leq WTP < t_2$.

2. The individual answers yes to the first question and yes to the second, then $t_2 \leq WTP < \infty$.

3. The individaal answers no to the first question and yes to the second, then $t_2<t_1$. In this case we have

$t_2 \leq WTP < t_1$.

1. The individual answers no to the first and second questions, then we have $0<WTP<t_2$.

Taking into account that the indirect utility of an individual i depends on buying health insurance policy and on income y. Let $q^1$and q^0 denote the level of utility associated with and without social health insurance respectively, WTP is the amount of money an individual is willing to pay as a contribution, *X* represents the vector of other affecting factors (such as age, sex, education, health status, etc.) that may contribute the preferences of individuals, π represents the perceived probability of getting ill and ε shows other factors that are unobservable or unpredictable to the researcher. Then, the WTP that equates the two indirect utility functions with and without social health insurance can be expressed as:

$$v\left[\left(q^1, y - WTP, X, \pi\right) + \varepsilon_1\right] = v\left[\left(q^0, y, X, \pi\right) + \varepsilon_0\right] \quad (1)$$

where $\varepsilon_1$and ε_0 are assumed to be with zero mean (Lopez-Feldman, 2012)[71].

It is accepted to test for internal consistency (theoretical validity) in CV studies by estimating a WTP equation. The theoretical model for explaining an individual's WTP comes from the income-compensating function (Willig 1976)

This is based on the assumption that the decision of individuals to accept or reject the proposed bid levels can be depended on the current situation and comparison of their utility from the social health insurance scheme. This implicates that the credibility that individuals to purchase and enroll the social health insurance can be denoted as the difference of their utility functions with and without the social health insurance.

5.2. Elicitation method for Contingent Valuation study

The Contingent valuations (CV) are survey methods for eliciting the WTP for non-market goods. In these survey methods, at the first stage, the good and hypothetical market is described to the individuals and then, they are asked to maintain the maximum amount which they are willing to pay. CV studies have four methods: open ended questions, bidding game, payment card, dichotomous choice method (single or double bounded). (William D. Schulze)[48]

The contingent valuation method is used to elicit individual's demand for the newly developed SHI and to assess the maximum willingness to pay (WTP) for SHI among informal sector workers, including unregistered informal workers in Oskemen City, Kazakhstan.

The CV method uses survey questions to elicit people's preferences for public goods by finding out what they would be willing to pay for specified improvements in them. The method is thus aimed at eliciting their willingness to pay (WTP) in dollar amounts. It circumvents the absence of markets for public goods by presenting consumers with hypothetical markets in which they have the opportunity to buy the good in question. The hypothetical market may be modeled after either a private goods market or a political market. Because the elicited WTP values are contingent upon the particular hypothetical market described to the respondent, this approach came to be called the contingent valuation method. (William D. Schulze)[48]

A number of previous studies have used contingent valuation to measure the WTP for health insurance in developing countries, including in rural Burkina Faso [17-20], rural

Cameroon [21-22], rural India [23], rural Iran [32], rural Nigeria [25], Ghana [26], Malaysia[28], Namibia[29] and rural Vietnam[30] A recent study has assessed the WTP for private health insurance in four small cities in China (in Shandong Province and Sichuan Province) [27].

WTP studies consist a large number of potential biases. I followed the typology which developed by Mitchell and Carson[31] when discussing the biases appropriate to our study and whether they may be a cause of problem or not. According to Mitchell and Carson ("potential response effect") biases were classified into three large groups (Mitchell R, 1993)[31]:

i) The first group concerns cases where respondents misrepresent their true WTP. For example, this could be a *strategic bias* when a respondent purposely states a WTP higher or lower than the true one because the respondent in his or hers self-interest wants to influence the result of the study. It could also be a *compliance bias* when a respondent gives an answer he or she believes the interviewer wants to hear.

ii) The second group concerns cases where the elicitation method implicitly gives a "correct" value for the WTP. The *starting point bias* is one of these biases. A bid is given to the respondent and thereby a cue to where the WTP might lay.

iii) The third group concerns different misspecifications of the scenario. In this case the respondent perceives the scenario differently to what is intended. Among these biases, the *part-whole bias* is of particular interest to our stud. It means that the respondent includes something which is not in the scenario or excludes something which is there.

Some evidence indicates that measuring yes responses by certainty about WTP ex post may be more effective (Karen Blumenschein, 2007)[50]. The connection strength between intention and actual behavior could potentially provide less biased results in this.

In addition, a mechanism to attaining the value from the respondent should be important. There are several ways to construct this mechanism including open-ended questions (continuous format), bidding games or referendum formats (dichotomous format). In this

survey study, a double bounded dichotomous choice elicitation method is used. Compared to most other elicitation methods, this procedure has significant statistical efficiency gains. (S.-H. Yoo, 2001)[51]

The elicitation methods were distinguished relative to two criteria. Firstly, a distinction is made whether WTP was directly obtained (open-ended questions), or whether a discrete indicator was used (closed-ended questions). With direct obtaining methods, the researchers try to measure maximal WTP of each individual, while with discrete indicator methods, individuals just have to state the range that covers their WTP. The second criterion deals with the issue whether single or iterated questions were used. Examples for directly obtaining methods with single questions are 'direct questions' and 'payment cards'. A directly obtaining method with a series of iterated questions is the 'bidding game', in which an auction process is simulated. This method is closer to market situations. Here, the respondents are asked whether they are willing to pay a given amount. Depending on their answers, this bid is lowered or raised and the individual is asked about this new bid. This process goes on until the maximum willingness to pay is found. This method underlies the danger of starting point bias, i.e. maximum WTP can be influenced by the first bid of this auction process. Bidding games require interviews or interactive computer programs and are therefore more costly than other methods which can be carried out by mail surveys. The directly obtaining methods provide more information on the WTP than discrete indicator methods. These methods provide only information on the range the personal willingness to pay is in. The mean WTP in the sample is estimated by statistical methods, e.g. regression analysis. (Klose, 1999)[37]

Three repetitions were used in the bidding game according to the answer to the starting-bid. The final response indicated the respondents' maximum WTP. A brief introductory explanation, scenario about health insurance and benefit packages in the social health insurance was provided to the respondents before designating their levels of WTP for the scheme. The

concept of MSHI and its financial benefits with attributes were explained before starting the bidding game.

The bidding game repetitions for eliciting WTP for the individual was:

6. The price of a monthly insurance premium (contribution) per person is 2000 tenge; are you willing to pay? [ ]

1 = Yes (Q2); 0 = No (Q3) Do not know (Q4)

7. What if the premium is 300 Tenge, will you be willing to pay? [ ]

1 = yes (Q4); 0 = No (Q4)

8. What if the premium is 1000 Tenge, will you be willing to pay? [ ]

1 = yes (Q4); 0 = No (Q4)

9. What really is the maximum amount you are willing to pay for MSHI? [ ]

III. Results

1. Data analysis

The data were entered and analyzed in the SPSS Statistics software. Data were analyzed primarily by a Pearson chi-square test (with Yates' continuity correction if 2 × 2 tables were analyzed) to examine the Goodness-of-Fit which can compare the observed event conditional probabilities with the corresponding event probabilities. When it was not possible to use a chi-square test (e.g., false approximations), a Fisher test was applied.

Their frequency WTP and predictors of WTP were identified using the interval data chi-square model using the 'crosstab' command in SPSS. The significance level was set at 95% confidence interval and p-value < .02. A full-to-reduced modelling approach was used. The independent variables with the insignificant p-value, and whose removal adversely affected neither the other coefficients nor the predictive power of the models, were removed sequentially.

2. Characteristics of Participants

From the 190 participants, 161 participated in the interview, making a response rate of 82%. The sex of participants was equally distributed 80(100,0%) were females and 81(100,0%) were males, their mean (± SD) age was 33.86 (± 11.673) years, ranging from 19 to 60. The monthly average income of participants (40%) was 85 000 tenge (US218$) ranging from 40000 tenge to 90000 tenge (US 103$ - 230$) respectively. 29 individuals from Oskemen city chose not to participate. The primary reason for not joining of 18 respondents was unwillingness to join and lack of time. The reason for refusal in 11 respondents was not clear.

Of the respondents who were willing to participate, 85% (n = 161) were willing to accept the first bid of 2000 tenge ($5.13) monthly per person, whereas 58% (n = 93) were unwilling to pay this first bid. When the bid increased to 2500 tenge $6.42 monthly per person, 67% (n = 45) of those willing to pay the first bid were also willing to pay this second bid, whereas 33% (n = 23) were unwilling to pay. Of the respondents who were not willing to pay the first initial bid of 2000 tenge ($5.13), when the bid was reduced to 1500 tenge ($3.85) monthly per person, all 21% (n=19) indicated that they were willing to pay for this lowered bid. The average willingness to pay was 1500 tenge monthly per person for all of the respondents who were willing to participate in the SHI plan. (Table 2).

Table 1, Description of the Independent Variables.

Variables		Mean/ Percentage
Type of hospital	Private	39
	Public	61
Chronic Disease	Present	36
	Absent	64
Accessibility and availibility	accessible	37
	not accessible	63
Time	From 20 minutes to 1 hour	82
	From 1 hour to 3 hours	13
	3 hours and high	5
Satisfaction with quality of services at public health facilities	Fully	24
	Partly	55
	Dissatisfied	21
Social Health Insurance Awareness	Yes	49
	No	51
OOP Service	Diagnostic, Medical devices	15
	Laboratory services	20
	Pharmaceuticals	50
	Transportation	7
	Others	8
Health Expenditure		10520.75
Sex	Male	50
	Female	50

Continue of the Table 1, Description of the Independent Variables.

Variables		Mean/ Percentage
Age		33.86
Education level	Elementary school	11
	High school/11years	63
	College graduate	13
	University graduate	13
Geographic location	Rural	26
	Urban	74
Number of Children		1.571
Marital status	Married	60
	Single/divorced	40
Employment	Agriculture/Farming	44
	Tamada and service	4
	Transportation and storage	21
	Waitress and one day workers	16
	Wholesale and retail trade	15
Income per month		84.986
Monthly expense		75183.85
SHI Trust	No improvement	56
	Improvement	44

3. Correlation among Variables

We used the respondents' past health expenditure to approximate the costs of the SHI. Average monthly health expenditure in the past year was 75.600 tenge (95% CI 21.6–33.1). Before providing Chi_square Test we divided WTP amount into two groups which are low bit is from 1000 tenge to 1500 tenge, and high bit from 2000 tenge to 3000 tenge (figure 5).

Amongst the numerous statistically significant variables such as income, monthly expenditure, type of visited hospital, accessibility and availability of health services in the "Guaranteed Volume of Free Medical Care" (further – GVFMC), Satisfaction with quality of services at public health facilities, Social Health Insurance Trust, Social Health Insurance Awareness and Health expenditure —showed a statistically significant relation to the willingness to pay. In the technical dimension, it was found that 26% of all interviewees lived in rural areas and 36% of respondents used health services in the "Guaranteed Volume of Free Medical Care" which were available and accessible on time. (for purposes annual medical check-up and screening (43%) and medical consultation (34%)); 20% of those dissatisfied with quality of the service at the facility. Conversely, there was no statistically significant association between WTP and Presence or absence of "chronic disease" in the individual or family members (p-value 0.813), "Time" to get local Health Facility (p-value 0,562), gender (p-value 0.682), age (p-value 0.344), Education level (p-value 0.532), geographic location (p-value 0.717), Employment status (p-value 0.445), Number of children in the household (0.779). By analyzing respondents Health Utilization Patterns it was clear that 48% of respondents who attended to Private Hospital is WTP second higher bit, while 39% of Public Hospital users were WTP the same bit. 44 % of informal workers with chronic disease were WTP the higher amount of 5% of Minimum Monthly Average. Also, it is interesting to note that average duration of time to get the nearest health facility was 45 minute ranging from 20 minutes to 1 hour. The Satisfaction level with quality of services at public health facilities had statistically significant association with WTP variables, 55% of respondents was partly satisfied with the

quality of health services. In case of Health services which is spent out-of-pocket money was Pharmaceuticals (49%), Laboratory services 19%, Diagnostic and Medical devices (16%) as seen in the Figure 5. Related to geographic location, showing that residence in rural areas led to decreased WTP. Other coefficients showed a positive relationship of gender with WTP, implying higher WTP amongst males compared with females. The average amount of money spent on the most recent illness with indirect cost such as accommodation, transport, and food was higher than 10000 tenge (37%) which shows that 13% of their monthly income is spending for Health care utilization and indicates the catastrophic health expenditure level. Catastrophic health expenditure is defined as out-of-pocket spending for health care that exceeds a certain proportion of a household's income with the consequence that households suffer the burden of disease. (Ekman, 2007)[66] Also, with the growth of GDP and real incomes of the population, the amount of spending from personal funds increases. (Ke Xu, 2010)[64] Income differentiation can have a dual effect on the ratio of public to private expenditure. A comparative analysis of a number of OECD countries showed that an increase in income differentiation is usually accompanied by an increase in the share of private expenditure. (Mou H, 2013)[65]

Most of respondents' finished high school (62%) and working in the farming/agriculture sector (44%). The average monthly expenditure was 75.000 tenge (US 193$) ranging from from 40000 to 90000 which was statistically significant for WTP variable. Health care expenditure accounted for 11.6% of overall monthly expenditure. It is interesting to note that among the chosen informal workers: agriculture/farming, transportation and storage, tamada and service, waitress and one day workers the agriculture and farming workers were more willing to pay higher amount of contribution (42%). There was no statistically verified association between employment status and willingness to pay. Yet the pattern was not strong enough to generate statistical significance. Table 2 shows that higher utilization of the local health facility was related to higher willingness to pay. Those households with a larger health care expenditure in the past 6 months were also more willing to pay the SHI premium.

A very diverse health-care-seeking behavior was found with contacts to Public and Private Hospital. There was statistically significant association between type of usually attended hospital and WTP. Informal workers who are mostly using private hospitals were more WTP second higher bid. This shows that out-of-pocket payment while using private hospitals can make financial burden for informal workers, consequently to prevent expenditure for disease, the informal workers want to join the insurance scheme and pay monthly contributions (p-value 0.003). The Mandatory SHI model in Kazakhstan and benefits was fully understood by 49% of interviewees, and this variable showed a statistically significant association with dependent variable WTP (p-value 0.062). In addition, the Trust for SHI insurance variable show a significant association with WTP and 56 % of respondents didn't trust the SHI model in Kazakhstan.

Table 2, Factors affecting the WTP among informal workers for SHI in Kazakhstan

Variables		WTP		Chi-square	P-value
		WTP1	WTP2		
Type of hospital	Private	33(51.6%)	31(48.4%)	1.351	0.003
	Public	59(60.8%)	38(39.2%)		
Accessibility and availability	accessible	37(63.8%)	21(36.2%)	1.637	0.001
	not accessible	55(53.4%)	48(46.6%)		
Satisfaction with quality of services at public health facilities	Fully	27(69.2%)	12(30.8%)	4.202	0.023
	Partly	50(56.2%)	39(43.8%)		
	Dissatisfied	15(45.5%)	18(54.5%)		
Social Health Insurance Awareness	Yes	51(64.6%)	28(35.4%)	3.482	0.000
	No	41(50.0%)	41(50.0%)		
Health Expenditure per month	From 5000 tenge to 10000 tenge	28(58.3%)	20(41.7%)	1.897	0.168
	from 10000 tenge and higher	27(45.0%)	33(55.0%)		
Income per month	from 20000 tenge to 40000tenge	9(100.0%)	0(0.0%)	11.011	0.026
	from 40000 tenge to 90000tenge	35(57.4%)	26(42.6%)		
	from 90000tenge and 200000tenge	36(55.4%)	29(44.6%)		
	from 200000 tenge to 500000 tenge	8(38.1%)	13(61.9%)		
	from 500000 tenge and higher	4(80.0%)	1(20.0%)		
Monthly expense	from 20000 tenge to 40000tenge	27(67.5%)	13(32.5%)	7.257	0.002
	from 40000 tenge to 90000tenge	45(54.9%)	37(45.1%)		
	from 90000tenge and 200000tenge	20(57.1%)	15(42.9%)		
	from 200000 tenge to 500000 tenge	0(0.0%)	3(100.0%)		
	from 500000 tenge and higher	0(0.0%)	1(100.0%)		

We also examined the impact of various covariates on the willingness of households to pay and for the proposed health insurance using the multinomial logistic regression. Before the multinomial logistic regression is estimated, we examine if there is any selection bias problem. According to Heckman, 1979 the WTP can differ due to unobservable characteristics

of respondents despite of absence of the significant difference in observed characteristics. To address this problem we estimate a sample selection model. In the first stage, a chi-square (selection) model is estimated in the full sample and in the second stage a multinomial logistic regression which is predicts the probability that an observation variables falls into one of two categories of a dichotomous dependent variable based on one or more independent variables that can be either continuous or categorical.

We performed the logistic regression (Table 3) to explore the factors associated with the participants' willingness to pay premiums in an SHI program. The factors that were statistically significant in the chi-squared analysis were used in the model.

The Wald statistics also reveal that the variables included in the model are jointly statistically significant in explaining the WTP decision of respondents

A logistic regression was performed to ascertain the effects of Income, Monthly Expense, Type of hospital, marital status, Accessibility, Satisfaction, SHI awareness, Health expenditure on the Willingness to Pay for SHI. According to the "Goodness-Of-fit table" information the logistic regression model was statistically significant, Chi-Square= 131.816, $p < .0005$. In the "Model fitting information" $p < .0005$, which means that the full model statistically significantly predicts the dependent variable better than the intercept-only model alone. The model explained 26.7% (Nagelkerke R^2) of the variance in WTP and correctly classified 68.5% of cases. After performing the logistic regression next variables were statistically significant: SHI Trust, SHI Knowledge, Income per month, Monthly expenditure and Health care expenditure per month. According to the "Parameter Estimates" table we can conclude that: Informal workers who are aware about SHI are 2.5 times more likely to pay (p-value 0.022) the second bit than person who is not aware. Also, Trust level for SHI was significant and the person who does not trust on SHI system and improvement in the Health Care system after introducing SHI 4.2 times less likely to pay (p-value 0.021) contribution rates compare to who does. In addition, monthly income and expenditure were statistically

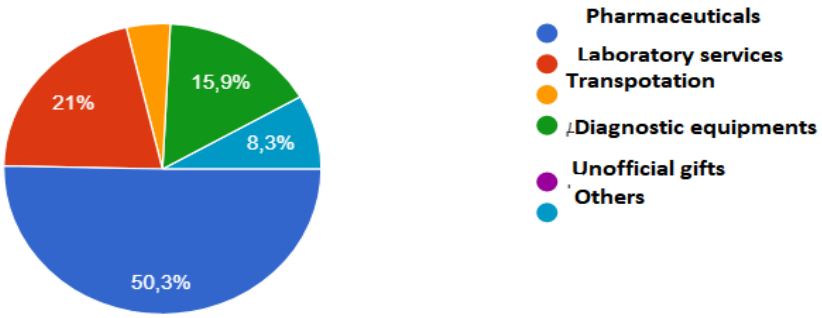
significant (p-value <0.005). The person who have monthly income between 40.000 tenge and – 90.000 tenge, which is lower the average monthly wage in this region, 5.8 times are more likely to pay for the second bit than the higher income group informal workers 500.000 tenge and higher. Also informal workers who are earning monthly from 90.000 tenge to 200.000 tenge 4.3 times are more likely to make contribution than the higher income group. In addition the Health Care Expenditure for the last month positively correlated with the willingness to pay (p-value 0.028). In addition, monthly household expenditure was statistically significant (p-value < 0,005) and the Logistic regression analysis is interpreted in the informal workers who is spending from 90.000 tenge to 200.000 tenge, which is equal to average wage in this region, 17,6 times more likely to pay than who are spending two times higher (500.000 tenge and high) Table 3.

Table 3, Logistic regression analysis on WTP for CSHI in Kazakhstan

Variables		**Odds ratio**	**P-value**
WTP1	Intercept	0.236	0.649
SHI Trust	Reference (Yes)		
	No	0.425	0.021
SHI Knowledge	Reference (No)		
	Yes	2.569	0.022
Accessibility and Availability	Reference (No)		
	Yes	0.429	0.128

Satisfaction level on Health Service quality	Dissatisfied	1.388	0.326
	Fully satisfied	0.808	0.751
	Reference group (Partly satisfied)		.
Income per month	from 40.000 tenge to 90.000 tenge	5.83	0.000
	from 90.000 tenge to 200.000 tenge	4.32	0.000
	from 200.000 tenge to 500.000 tenge	2.54	.
	Reference group (from 500.000 tenge higher)		.
Monthly Expense	from 40.000 tenge to 90.000 tenge	18.724	0.000
	from 90.000 tenge to 200.000 tenge	17.679	0.000
	from 200.000 tenge to 500.000 tenge	17.164	.
	Reference (from 500.000 tenge higher)		.
Health Care expenditure per month	from 5000 tenge to 10.000 tenge	0.884	0.028
	Reference (from 10.000 tenge higher)		.

Figure 5, Type of services which informal workers made Out-of-pocket payments in Oskemen city



Using the "Expected Utility Theory" in the Health Insurance I wanted to analyze the appropriate Contribution rate for informal workers in the East Part of Kazakhstan which average income is 85,000 tenge and average monthly Health Expenditure is 10.000 tenge. By taking into account the consideration an individual who registered in the MSHI (or consumer) who derives utility from disposable wealth (w) and from health (H). A function of medical service (M) is labelled H, and the utility of w and M differs according to whether the person is falling sick, s, or healthy, h, so that: us=us(w,M)and uh=uh(w,M),.where $u_w>0$ and $u_{ww}<0$. (Nyman, 1999)[63]

In case of occurring disease in healthy individual we can assuming that $u^s_M>0$ but $u^h_M=0$. Supposing further that the getting medical care in the health facilities M is to buying it privately out of pocket payment (the consumer's wealth) or through the disbursement from health insurance (Nyman, 1999).

In case of having health insurance, $w=W-M-P+I$, where W is Income, P is the insurance premium, and I is the insurance disbursement. The probability of sickness is π, where $0<\pi<1$. Effective Insurance can be assumed in case of $\pi M=P$, and only in good regulated health

insurance system is *I=M*. Supposing that the price of each medical intervention in Kazakhstan is fixed so that *M* is normalized (Nyman, 1999).

Every Diagnosis have standardized treatment protocols. Some treatment protocols have costs, *M*, that are affordable or less than Income, *W*, and some have costs that exceed Income amount or not affordable. When treatment price is higher than income, the treatments cannot be purchased, conversely in case of health insurance coverage, such medical treatment can be purchased because $P(=\pi M)<W$.

Assuming insurance coverage for a disease for can be $M<=W$. The profit from insurance for a specific disease is roughed by the traditional risk-avoidance profit that has been identified and incorporated into next calculations:

(1)EU=πus[W−M,M]+(1−π)uh[W,0] without insurance, and

(2)EU=πus[W−M−P+I,M]+(1−π)uh[W−P,0]=πus[W−P,M]+(1−π)uh[W−P,0]

with insurance.

In that case we can assume that expected utility with insurance should be higher than expected utility without not having insurance (Nyman, 1999).

$$v(\pi(X))=-\int_0^{\infty} v(t)dg(S_X(t))=\int_0^{\infty} v(t)d\left[1-g(S_X(t))\right].$$

Using the mean-value-distortion pricing principle we calculate the monthly insurance premium for informal workers whose monthly average income is 85000 tenge and health care expenditure is 10.000 tenge should be less than 1189.75 tenge. P≤1189.75 tenge. The minimum monthly wage average in Kazakhstan is 42 500 tenge which is 109$ in US According to the Law of “Mandatory Social Health Insurance in Kazakhstan” the premium level for informal workers, for individuals who do not have a permanent income and are not included in the list of preferential categories of citizens who receive insurance from the state 5% of Monthly wage. Taking account 5% of minimum wage of Kazakhstan was 2000 tenge (5.50 $ US). This shows that officially set premium for informal workers higher than actually calculated premium level

which is P≤1189.75 tenge (3.06$), which is 40% higher. Assuming these indifference and financial burden to informal workers in the less economically developed area we conclude that "premium level should be set according the geographical distribution and economic development status of regions, also in setting the monthly contribution level it is important take into account the actual income of informal workers".

We collected information on socio-economic characteristics that were hypothesized to be determinants or correlates of WTP for health insurance as independent variables in regression analysis. As mentioned in Health level and age structure of the population. As a result of the deterioration of health or the increase in the proportion of the elderly population, there is an increase in demand for medical care. Depending on whether the public health system is able to meet new needs, this may lead to increased public or private funding.[8] We expected WTP to increase with age (because morbidity increases with age), income (because, holding other factors constant, higher income should lead to higher demand of all goods that are not inferior goods and there is no evidence to suggest that health insurance is an inferior good), and education (because individuals who have a low time preference should be both more likely to invest in education and more willing to pay for insurance).

The health fund should plan the use of its scarce resources in order to avoid waste, duplication and inappropriate investment. The infrastructure must be suited to the particular social and epidemiological conditions in each country. The process of introducing health insurance as a financing mechanism must include planning for infrastructure and staff training. If the right staff are not available, training facilities must be set up. (Charles Normand, 1994)[1]

Most informal sector workers in Oskemen are currently not enrolling to the SHI system. If the City Government of Oskemen city makes decision to enroll the informal sector workers, this study will offer a good opportunity to assess the criterion validity of WTP responses by comparing actual demand to demand predicted from a contingent valuation study. Currently, we can only examine the construct validity of the WTP responses, one of the construct validity

test for WTP are the income elasticity test. According to the demand theory if income elasticity of goods is positive and health insurance is not taken as an inferior good. We found that the income elasticity of SHI is indeed positive after controlling for sex, age, address, and employment status and health expenditure. Our results thus pass the income elasticity test.

IV. DISCUSSION

To establish the Compulsory Social Health Insurance the health sector in Kazakhstan is undergoing reforms at the national level. Health sector reform is difficult to conduct and requires more political and financial effort. Nowadays even middle income, developed countries face delays and issues while trying to reform their health sectors and adopting a social health insurance system. Compare to developed countries developing countries have even greater problems when attempting to establish a health insurance program. The findings of this study can help improve informal workers understanding of the willingness to participate and pay, also affecting factors that must be considered when planning and performing such a system.

This study analyzed that willingness to pay for SHI among informal workers and affecting factors on paying the setting bits which were ½ higher and lower from official contribution rate in the East Kazakhstan. The main results of this study were that informal workers were on average willing to pay 1500 tenge to join the SHI for themselves. Depending on the method chosen to elicit the WTP, income level and health care utilization influence this average. In addition, this study did not include special features for insurance as a co-payments and deductibles. Understanding the main mechanism and benefits of insurance is an important factor for the successful implementation of the SHI scheme. Questioning the interviewees' awareness revealed that the 49 % of informal workers understood the main insurance idea. Around 43% of respondents believed that a CHI would improve the situation in the household and health care service. These facts give an important concept that informal workers attitudes toward SHI and WTP are a reason for optimism with regard to the feasibility of a SHI scheme in the East part of Kazakhstan. In the study conducted by Lan Hoang Nguyen in the Central Vietnam found that individuals who have good knowledge about social health insurance are willing to pay higher amount and they concluded that the improving of awareness of the benefits of SHI among the population should contribute to expanding SHI coverage in Vietnam.

(Lan Hoang Nguyen, 2017). In addition, study conducted by Tesfamichael in Ethiopia revealed that teachers who was aware about the health insurance scheme were 2.5 times more willing to pay for it than those who was not aware of it (Tesfamichael AA, 2014). In our study, it is showed that informal workers who is aware about SHI mechanism are 2.5 times more likely to pay compare to who does not have knowledge about this scheme. Study conducted by Dr.Suminder Kaur Bawa in Punhjab, India found that lack of awareness and willingness to join can be barrier in the subscription of health insurance.

Income per month was a significant variable in our study. Respondents with more income were more likely to be willing to pay than those who earned less. Studies conducted in China, Vietnam, India and Malaysia found income to be a significant factor in determining willingness to pay for health insurance. Our findings suggest that informal workers with a lower income are more likely to be willing to participate and pay than those from a higher income workers. In our study it is found that informal workers with low salary between 40.000 tenge and 90.000 tenge 5.8 times more likely to pay a for SHI contribution, however the informal workers who are earning more than low income individuals (90.000 tenge – 200.tenge) 4.3 times more likely to pay compare to informal workers who have higher income which is 500.000 tenge and higher. Also, the informal workers who are earning between 200.000 tenge and 500.000 tenge which is 3 times higher than minimum wage in this region 2,5 times more likely to pay for SHI contribution per month than higher income group. These shows that demand and participation level of low income group informal workers higher and they want to enroll this scheme in order to avoid household burden due to the illness. A higher utilization rate connected with higher coverage with SHI was described in the studies from Mali, Burkina Faso, and India. The main cause of these unfavorable situation is purpose of SHI which focus on the access increase to and usage of health services. In the study provided by Rosmond Adams in st.Vincent suggested about moral hazard after Community Health Insurance expanding the coverage the moral hazard risks, overusing the free services and need expansion.

Although it is difficult to assess contributions for any self-employed people, there are particular problems with people working in agriculture. Farmers have the additional problems that incomes are very uneven over the year. A large proportion of their income may be realized in a few weeks (i.e. harvest time) and so they will have real difficulty in paying regular weekly or monthly contributions. As a social insurance system what can happen is that there can be (Charles Normand, 1994) income redistribution where people of higher SES can contribute more especially in a developing country where unemployment is high and the informal sector employs a great part of the labor force[1]. Also, in Penang state in Malaysia it is found (A.A. Shafie, M.M. Hassali) that household income level can influence to the willingness to pay and high income can increase the WTP 79,6%. Study provided in Wuhan, China concluded that the probability of WTJ for the CHI would increase 0.83 – 1.54% of income increase 100 Yuan across all models (Licheng Zhang, 2005). [18]

Several other background variables related to socio-economic characteristics showed a sufficiently insignificant association with the willingness to pay. Trust on Social Health Insurance system, effectiveness and the transparency of this system was statistically significant factor for Willingness to pay this scheme. Informal workers who do not trust this scheme 4.2 times less likely to enroll and make contribution than who has trust. In the study provided by Rosmond Adams in st.Vincent found that respondents who were satisfied with the system less likely to participate than satisfied. Study provided by Martin Eckhardt in rural tropical Ecuador found that vertical and horizontal trust indexes did not show a significant association with willingness to join to CSHI scheme.

The findings also imply that people may not enroll in the scheme if the premium is not reduced to make it affordable according the geographical location, and such scheme will require a large pool for fund accumulation of premiums to attain financial risk protection.

According to the OECD review in Kazakhstan Health care System in 2018 ,-“The health system provides reasonable access to services but financial protections against the costs

of illness are weak"[6]. To eliminate this problem Kazakhstan government planning to reach insurance or contribution coverage to all citizens and enroll the informal sector workers who is not paying tax. Since social insurance is usually financed through deductions from incomes, the core group normally covered by this system is made up of workers in the formal sector. Special efforts are made to cover workers in the informal sector because of difficulties in registering them and assessing their incomes. Nowadays, the number of persons for whom contributions made and contributions were received amounted to 5.1 million people. The indicators correspond to the forecast expectations of the social health insurance Fund for the current period. The cities of Almaty and Astana, as well as Karaganda and East Kazakhstan regions are leading in the payment of contributions. To analyze and study the insurance coverage expansion is to estimate their contribution rate by analyzing WTP according to their income and expenditure levels. This study is conducting first in Kazakhstan since the SHI introduction and has some limitations. First, the study area covered just one part of Kazakhstan and range of informal workers were small. Second, this study doesn't analyze the socio-economic characteristics and reasons of informal workers who refuse to fill the questionnaire. However, despite some limitations this study define the average contribution amount of informal workers, whose income was 85.000 tenge, the average contribution amount was 1500 tenge which were lower than official set amount (2000 tenge). Several factors can affect the low level of payment ability. First, the respondents don't fully understand the SHI system and the benefits in case of unexpected situations.

The main problem is the large number of self-employed people for whom contributions are not made. Into this category includes more than 2 million people. Of these, 503 374 persons are young people. To attract such a number of self-employed people, the Government in April 2018 proposed to create a Single aggregate payment – a special tax regime. At the same time, citizens whose employment is not formalized, the possible instability of payment of contributions from individual entrepreneurs, the existing high volume and irrationally high

proportion of expenditures on the stationary sector, the underdevelopment of the PHC sector can put pressure on the financial stability of the CSHI system. This, in turn, requires the Fund to develop the necessary measures to contain excess costs, as well as a forecasting system and the creation of an effectively functioning risk management and internal control systems.

One of the sustainable approach for financing health care from the macro and micro points of view to achieve UHC is health insurance. It is predicted that health insurance will provide the funds to improve the health care delivery and increase access to health care services, especially for the poor and vulnerable people. In order to develop the solidarity of the population and employers in the sustainable development and efficiency of the national health system, as well as to eliminate financial risks due to the growing public and private health costs, a system of compulsory social health insurance was introduced in Kazakhstan. Beside the organizational and managerial issues, one important area is willingness to join and pay the prescribed premiums among voluntary enrolled people such as informal workers is an important question to consider. These feasibility questions are needed to estimate whether the scheme will be economically feasible for participants and for the fund.

As much as 82% of the respondents had the desire to join a health insurance scheme and 72,6% (p-value <0,005) of them were willing to pay a contribution premium of 1500 tenge or $3.86 a month. The majority of the informal workers were willing to enroll the social health insurance scheme, with a mean of WTP of 2% of their average monthly salary. This was lower than the premium proposed by the government (35%). The variables that significantly explain the levels of premium if individuals for willingness to pay are SHI awareness, income, expenditure and Health expenditure. As income increases or the proportion of informal workers who a willing to higher premiums for health insurance decreasing respectively. Households with higher levels of health expenditures or people who find health care cost difficult to bear are less likely to accept higher health insurance premiums. The study also shows that an

increase of awareness and trust on SHI system would lead to willingness to pay higher premiums.

About 31% of all interviewees who reported a past illness case had sought care at the local health facility, polyclinics and ambulatories. Others had different health care seeking, extending from local informal to distant public or private formal health care providers. Low utilization rate of health care could be a barrier to a SHI scheme that is connected with the local health service. Almost 34% of respondents reported that they were unsatisfied with the quality of the health delivery and 38% were recommended to improve the qualification level of physicians these highlights the importance of the improvement of health financing and delivery strategies These findings are in line with studies in “Feasibility of community-based health insurance in rural tropical Ecuador in the study region”, Martin Eckhardt, Birger Carl Forsberg, Dorothee Wolf, and Antonio Crespo-Burgo. They concluded that cultural and social issues can be barriers to accessing the local PHC with line in monetary values.

The local health delivery services should be defined by clearly recognizing and removing key obstacles for health care seeking make the service more engaging, which could positively influence factors like willingness to pay, willingness to join, attitudes toward SHI, and actual enrollment. Close collaboration and informing the local communities about SHI is essential. In the study conducted by Edwine W. Barasa in Kenya divided the retention and enrollment of informal workers into two factors as a provider and purchaser. As a purchaser factor they highlighted the lack of communication and information sharing between the National Health Insurance Fund and public. In case of Kazakhstan, Oskemen city lack of information about the mechanism and benefits of Social Health Insurance is impeding the willingness to join among informal workers.

Analyzing the monthly expenditure on health care, average 37% of all respondents had already paid (10000 tenge and higher) half of the proposed annual SHI premium on only one illness episode. This reflects that a substantial expenditure on health care, which could have

been contributed to pay for a SHI premium in order to get primary care protection for 12 months. In addition, the individuals who paid from 5000 tenge to 10 000 tenge for health expenses last month 8.8 times are more likely to join and pay for social health insurance. In the study conducted by Rosmond Adams in St. Vincent found that higher income can increase the willingness of respondents to participate which was controversial to our study. In our study informal workers with low salary and high medical expenditure were more willing to participate and to avoid from financial burden. In addition the study provided by Martin Eckhardt in rural tropical Ecuador found that total average Health Care expenditure relates to willingness to join to Community Health Insurance. By taking into account that Community Health Insurance and Social Health insurance have the same mechanism for pooling, providing and contributing the premium we can use this result in our study. The study conducted According to the analysis made by National Health accounts in Kazakhstan the influence of external socio-economic parameters of the Republic of Kazakhstan has a weak impact on the growth rate of private spending on health care, which may mean the predominant influence of public policy in the Republic of Kazakhstan on the level of private spending indirectly by determining the composition and volume of free medical care. Observed in Kazakhstan, high private costs, threaten the availability of health care services, increase inequality in the level of medical services and adding to the burden on the poorest segments of society associated with the need to purchase expensive treatment with consequences for economic growth.

The population of 10% of the poorest population grew faster during the year than 10% of the poorest. Compared with the level at the end of the 3rd quarter of 2015, the number of low-income Kazakh citizens increased by almost 27 thousand people, while the number of wealthy citizens of the Republic of Kazakhstan increased by 18.3 thousand people. 10% of the richest citizens of Kazakhstan have 23.6% of all incomes of the population. At the same time, the level of inequality in the Republic of Kazakhstan remains low (0.281), although its indicator has increased compared to 2013. (Balabanova D, 2004)[8]. On the economic side of CHI

feasibility, costs for the proposed CHI scheme could have been calculated. The study has some limitations. Answers about the attitude toward trust and the SHI awareness might have been biased. This study tried to limit bias by asking a control follow up question concerning the latter. The results for actual expenditures on health and household were used to make a first comprehension into the possible ability to pay. Last, a larger sample size can make a more detailed analysis of subgroups in the study areas. Also, the study population is found to be quite homogeneous with regard to factors that could possibly influence their willingness to pay. As a generally, the elicitation technique in the contingent valuation studies is always exposed with bias and the allocation of the first bid is also a significant factor. We noted that followed by decreased first bid level all the most respondents' accepted the lowered bid. It could be that the starting bid was too low to accept. Interviewer bias is also to be considered as they can offer to the respondents to participate and to choose the setting bids. In addition, we only collected data on individual willingness to join and pay.

V. Conclusion

The goal of Government of Kazakhstan is reach Universal Health Coverage by covering every citizen of Kazakhstan by Social Health Insurance which can make health service accessible and available without financial burden for households. However, in the implementing of Compulsory Social Health Insurance the coverage of informal workers is big burden. Defining the demand or willingness to join and pay for health insurance is crucial in exploring the feasibility of such schemes, establishing prices, and setting potential contribution levels. (Charles Normand, 1994)

This study conducted in Oskemen city is effort to define the socio-demographic factors which can influence on the Willingness to join to the Compulsory Social Health Insurance Scheme and to compare the actual level of premium, which they can afford to contribute monthly, with the official set premium level. Willingness to pay for social health insurance was found to be predicted by accessibility and availability of free medical care, SHI knowledge, Income per month, Monthly expenditure, and Health care expenditure per month. More than half of the informal workers (51%) in Oskemen city of the East Part of Kazakhstan does not have awareness of the very basics of the social health insurance. Thus, it is recommended that health policy makers should engage key stakeholders such as community members and employers in knowledge creation, and should promote the scheme so that every employee will be conversant in it for successful implementation.

The majority of the informal workers were willing to enroll the social health insurance scheme, with a mean of WTP of 2% of their average monthly salary. This was lower than the premium proposed by the government (35%). This can pave the way to enroll the informal workers the scheme but attention should focus on improving the quality of health services and their awareness about SHI.

Our results suggest that the contribution rate for informal workers should be revised according to income level of regions and geographical location of informal workers. Also, it is important to provide Educational Campaigns for rural dwellers and for people who doesn't have access to media equipment's. Because the willingness to pay is positively correlated with SHI awareness and Trust level on the system. Our results further suggest that informal sector workers do not value the MSHI as a mechanism to recover the relatively frequent but small financial losses associated with common illnesses, but because it protects against the rare but large financial losses associated with catastrophic care. A recent analysis has suggested that the achievements of CHI in terms of the three sub-functions of health financing systems (revenue collection, pooling of resources, and purchasing) have been modest (Carrin, Waelkins, & Criel, 2005); the major constraints they identified to participation in CHI schemes were affordability, trust in scheme management, the attractiveness of benefits packages, and the quality of care offered.

This is the first report on the willingness to participate and pay study on Social Health insurance among informal workers in Oskemen city in the East Part of Kazakhstan. It is also the first study at the micro economic level to assess participation in a SHI program in Kazakhstan. Because of similarities in the background of the Oskemen city, our results can be generalized as a reference for other parts of Kazakhstan which are implementing SHI.

An implemented Compulsory Social Health Insurance program can serve as a reliable and stable income for health care providers. Also, this system can contribute to the cost recovery for the health sector and protect the poor against high out of pocket spending. According to Weber, Coverage rural majority and self-employed people in small or informal businesses raises technical and insurmountable administrative difficulties. Also, equity problems can be raised in insurance schemes with age-related contributions. Citizens whose employment is not formalized, the possible instability of payment of contributions from individual entrepreneurs, the existing high volume and irrationally high proportion of

expenditures on the stationary sector, the underdevelopment of the PHC sector can put pressure on the financial stability of the CSHI system. This, in turn, requires the Fund to develop the necessary measures to contain excess costs, as well as a forecasting system and the creation of an effectively functioning risk management and internal control systems.

Government should raise awareness among low-income earners and those informal workers without health insurance to increase the demand for SHI coverage. Therefore, people with lower socioeconomic status must be involved from the beginning of and the implementation process to improve their knowledge of and participation in the scheme. The findings of this study can enhance the informal workers participation and willingness to pay where illness more common for lower income people. Also by identifying the statistically significant factors which correlate with WTJ positively it can assist for policy makers in the designing and implementing of CSHI scheme for informal workers.

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Appendixes

Appendix 1. THE STRUCTURE OF THE POTENTIAL CONSUMERS OF MEDICAL SERVICES IN THE SYSTEM CSHI AND THE RATES

Groups	Members	For whom	Premium levels	When to pay
1	Employers	For their employees	2017 – 1% 2018-2019 – 1,5% 2020 – 2% 2022 – 3%	Monthly from July 1, 2017
2	Individual entrepreneur (Private lawyer, notary, professional mediator)	• For themselves and their employees • for themself as an IE • for employees - as an employer	2018-2019 for themselves does not pay; For employees as an employer - monthly from July 1, 2017. From January 1, 2020 – 5% of 2 MW	For themselves as an IE monthly from January 1, 2020. ! IEs working under the simplified regime for 6 months of 2017 pay contributions for themselves until February 25, 2018.

3	Members of peasant farms (who is not employee of PF)	For themselves	5% of 1 MW	From January 1, 2020 Contributions can be made in advance for 3, 6 or 12 months
4	Owner of peasant farm	For themselves and their employees. For yourself as an IE, for employees – as an employer	2017 – 1% 2018-2019 – 1,5% 2020 – 2% After 2020 – 3%	from 1 January 2020 – for themselves; from 1 July 2017 - For workers
5	An individual who works under a civil legal contract	Contributions from your income are withheld and transferred by the service recipient (tax agent)	2020 - 1% of the income received under the contract; 2022 – 2%	from January 1, 2020 monthly during the term of the contract
6	For hired workers	From July 1, 2017, the employer makes the deductions for the employees. In addition, from January 1, 2020, the employer monthly deducts contributions from the employee's salary and transfers them to the Social	2020 – 1% 2021 – 2%	Monthly from January 1, 2020. From the income of hired workers, contributions are kept and paid by employers

		Health Insurance Fund.		
7	Individuals who do not have a permanent income and are not included in the list of preferential categories of citizens who receive insurance from the state	For themselves	5% of 1 MW	Monthly from January 1, 2020

Source: e-gov.kz

Appendix 2, Description of independent variables hypothesized to explain willingness to pay (WTP) for Social health insurance

Variables	Explanation	Measurement	**Hypothesized relationship with WTP**
Age of respondent	How old (in years) the respondents are	A continuous quantitative measure	The older the people, the more the WTP
Sex of respondent	Whether respondent is male or female	1= male 0= female	Males will be more willing to pay than females
Education level	Whether the respondent had formal higher education	1= had formal higher education 0=didn't had formal education	People with formal higher education will be more willing to pay than others

Geographic location	Measures whether a respondent is resident in an urban or rural area	0 = rural residence 1 = urban residence	Urban residents will be more willing to pay for MSHI than rural residents
Number of children	Total number of children within each household	A continuous quantitative measure	Higher numbers of childrens will lead to lower WTP
Family status	Whether respondent married or single/divorced	1= married residence 0=single/divorced residence	Married couples are more willing to pay rather single/divorced ones
Knowledge about MSHI	Whether the respondent knows about social health insurance	1=has knowledge 0=doesn't have knowledge	Knowledge about social health insurance can effect on higher WTP
Chronic disease	Whether respondent or household members have chronic disease	1 = presence of chronic disease 0= absence of chronic disease	People or household members with chronic disease will be more willing to pay
Health care facility usually attended	Measures whether a respondent is attending to public or private hospital	1=public hospital 0=private hospital	People who attended to private hospitals are willing to pay more than public hospitals
Primary occupation		1=Farming/agriculture 0= other self employment	

Total household expenditure	Amount that household or individual spent on household needs 1 month prior to interview	A continuous quantitative measure	The higher the general household expenditure, the lower the WTP
Total household income	Amount money hat household or individual can generate per month	A continuous quantitative measure	The higher the income the higher the WTP
Distance of hospital	Average Time travelled to attend clinic	in natural logarithms	The longer time for travelling can effect on lower level of WTP
Past HEXP	Last month's expenditure on health care	in natural logarithms	The higher level of last month health expenditure can make higher WTP
Satisfaction with quality of services at public health facilities	The satisfaction level with the quality of the health care service which is provided by Health organizations during the last visit	1= fully satisfied 0= dissatisfied 3= partly satisfied	The higher satisfaction level can effect on increasing WTP
ImprSHI	SHI can improve the Health Service Delivery in the Republic	1= improvement 0= no improvement	The believe that SHI can improve the service delivery can make WTP higher

Accessibility	Accessibility and availability of Health services which is included in the guaranteed volume of free medical care without OOP	1= accessible	The accessibility and availability of free Health services without any financial difficulties can make WTP level lower
Time	Time to get the nearest hospital	From 20 minutes to 1 hour – 0; From 1 hour to 3 hours – 1; 3 hours and high – 2;	Increasing Time duration can decrease the WTP
SHI Trust	The respondents expectation whether the SHI can improve or deteriorate the health system quality	0 – No improvement 1- improvement	Improvement factor can increase the WTP